What is claimed is:

1. A medical device comprising a stimulation compound that stimulates production of VEGF, the medical device being an implantable medical device, a catheter, a dressing or a surgical instrument.

2. The medical device of claim 1 wherein the stimulation compound comprises a polypeptide.

3. The medical device of claim 2 wherein the polypeptide comprises hypoxia-inducible factor 1.

4. The medical device of claim 2 wherein the polypeptide comprises hypoxia-inducible factor 1-alpha.

5. The medical device of claim 2 wherein the polypeptide comprises a mutant form of hypoxia-inducible factor 1-alpha that is more stable than the native form under non-hypoxia conditions.

6. The medical device of claim 2 wherein the polypeptide binds to the VEGF hypoxia response element.

7. The medical device of claim 1 wherein the stimulation compound stimulates transcription of VEGF.

8. The medical device of claim 1 wherein the medical device comprises a heart valve prosthesis.

9. The medical device of claim 8 wherein the valve has flexible leaflets.

10. The medical device of claim 9 wherein the flexible leaflets comprise a polymer.

11. The medical device of claim 9 wherein the flexible leaflets comprise tissue.

12. The medical device of claim 11 wherein the stimulation compound is associated with the tissue leaflets.

13. The medical device of claim 9 wherein the heart valve prosthesis further comprises a support structure supporting the leaflets and a sewing cuff.

14. The medical device of claim 13 wherein the sewing cuff comprises fabric and wherein the fabric is associated with the stimulation compound.

15. The medical device of claim 13 wherein the stimulation compound is associated with the support structure supporting the leaflets.

16. The medical device of claim 8 wherein the valve has a rigid pivoting occluder.

17. The medical device of claim 1 comprising a sewing cuff wherein the stimulation compound is associated with the sewing cuff.

18. The medical device of claim 1 wherein the medical device comprises a vascular graft.

19. The medical device of claim 1 wherein the medical device comprises a polymer material in which VEGF production stimulator is incorporated within the polymer material.

20. The medical device of claim 1 wherein the prosthesis comprises tissue.

21. The medical device of claim 20 wherein the tissue is crosslinked.

22. The medical device of claim 20 wherein the tissue is uncrosslinked.

23. The medical device of claim 1 wherein the prosthesis comprises at least about 10 mg of stimulation compound.

24. The medical device of claim 1 wherein the prosthesis comprises at least about 100 mg of stimulation compound.

25. The medical device of claim 1 wherein the medical device is a vascular stent comprising a biocompatible material.

26. The medical device of claim 1 wherein the stimulation compound is releasably bound to a material of the medical device.

27. The medical device of claim 26 wherein the stimulation compound is adhesively bonded.

28. The medical device of claim 26 wherein the stimulation compound is covalently bonded.

29. The medical device of claim 26 wherein the stimulation compound is microencapsulated.

30. The medical device of claim 1 wherein the medical device comprises an annuloplasty ring.

31. A method for producing a medical device, the method comprising associating a stimulation compound with a biocompatible material.

32. The method of claim 31 wherein associating the stimulation compound with the biocompatible material comprises direct association.

33. The method of claim 31 wherein associating the stimulation compound with the biocompatible material comprises chemical bonding.

34. The method of claim 31 wherein associating the stimulation compound with the biocompatible material comprises adhesive bonding.

35. The method of claim 31 wherein associating the stimulation compound with the biocompatible material comprises incorporating the stimulation compound into the matrix of the biocompatible material.